in Great Britain. With the single exception of the Gatty Laboratory at St. Andrews, which is supported by the university, the biological stations of England derive only meagre rentals of a few tables directly from university or educational funds. The stations have been forced, therefore, to turn to memberships of supporting societies composed to a considerable extent of scientific men themselves, to private benefactors, and to the commercial interests of the fisheries for aid. The result has been a relatively meagre and fluctuating financial support, a large, but, fortunately, rarely predominating amateur, as over against strictly scientific control, and a relatively very large absorption of the funds and activities of the British stations in scientific fisheries work. The scientific fisheries work done by the British stations is unsurpassed in its excellence and effectiveness, and the popular features, such as public aquaria, elementary and technical instruction, are generally well developed, but the strictly scientific phases of the station's activities too often suffer for lack of adequate financial support and from consequent loss of scientific interest."

The report describes the marine stations at Plymouth, Lowestoft, Cullercoats, Port Erin, Piel, Millport, and St. Andrews, and the Sutton Broads freshwater laboratory (which owes its origin and support entirely to private benefaction), and points out their special features and the facilities they offer. Appreciative reference is made to the teaching work carried on among the fishermen at Piel, as being mutually beneficial and leading to a better understanding, on the part of the investigators, of fisheries problems, and on the part of fishermen to a more just appreciation of the efforts of those who seek most wisely to preserve the resources of British waters.

The author urges that a well-equipped and scientifically maintained aquarium should form part of every marine station easily accessible to the public, for in no other way can attention be secured and instruction so forcefully conveyed as by the neverfailing interest presented by living creatures well displayed.

The bulletin before us affords striking proof of the vitality of the principle carried into practice by the late Prof. Dohrn, for it shows that there are nearly one hundred institutions in Europe which may be classed as biological stations. These and the laboratories of a similar type in other lands, which owe their foundation to the stimulus and example given by Prof. Dohrn, have exerted an inestimable influence on biological science by placing the investigator in positions of greatest advantage with respect to living creatures, and by providing opportunities for long-continued and close observation and experiment upon abundant and varied material. Not the least valuable factor of such laboratories is the stimulus of contact with other investigators engaged in different lines of research.

In addition to the morphological and embryological researches, which, for many years constituted the chief work done in biological stations, these stations have in recent years facilitated the rapid extensions which have taken place in the domain of experimental physiology and in the wide application of experimental methods to the casual analysis of biological phenomena, thus helping materially to place the science on a broader and more comprehensive basis. During the past decade the work of biological stations has been more fully appreciated in regard to economic and industrial affairs, as is witnessed by the foundation of so many new laboratories on the continent of Europe, and by the increasing use of their facilities in medical instruction, in researches in comparative physiology, and especially in connection with the modern development of fisheries research. In this last direction it becomes increasingly evident that scientific investigations are imperative if the harvest of the sea is to be fully reaped and its resources to be maintained unimpaired for the future. But these investigations, while, of course, directed largely to the solution of the problems presented by the fisheries, must of necessity be founded on the broader basis of general biological inquiry. Fresh-water stations are likewise doing a sound work in regard to the problems of pisciculture, restoring and improving the sanitary conditions and food resources of the streams and lakes with which they are associated.

But apart from all economic problems, important though they are, the purely scientific aspect of the work of these stations wholly justifies their existence and the claims they have upon the community, for, to quote again from Prof. Kofoid's report,

> The biological station is a unique agency in biological research, indispensable in the equipment of a nation for the upbuilding of leaders in biological teaching, and in the development and expansion of the spirit of research.

NOTES.

A WARM tribute to the value of the scientific work carried through in the West Indies by the Imperial Department of Agriculture was paid by the Prime Minister, Mr. Asquith, in a speech at a banquet given by the West Indian Club on June 15. In the course of his remarks, Mr. Asquith said:—"I desire to refer for a moment with the warmest appreciation to the work of the Central Department of Agriculture. Established in 1898 at the cost of the Imperial Government, presided over with distinguished ability first by Sir Daniel Morris and now by his successor, Dr. Watts, the work of that department is universally and gratefully acknowledged by the planters to be largely responsible for the improved state of affairs in all branches of agriculture, and I believe—I speak with some experience—it would be difficult to find a case in which any analogous experiment made by the Home Government has attained such speedy and satisfactory results. The outlook is thus full of promise, and not the less so by reason of the fact that the Panama Canal is now approaching completion. The ultimate effects of that great enterprise are, of course, at present incalculable, but it can hardly be doubted that it will in the long run favourably influence the economic progress of the West Indies." It is seldom that such warm commendation is given by a Minister, but the work that has been done merits it fully. So long ago as 1888, the value of botanical federation in the West Indies was urged in these columns, and several articles appeared relating to it and the starting of experiment stations and other aids to the development of the colonies. It is gratifying to find that after all the years which have elapsed since then the results are regarded with such satisfaction, not only by the persons closely concerned with the West Indies, but also by statesmen in the mother country.

A MEETING was held at the Colonial Office on June 14 to discuss with representatives of the self-governing Dominions and States a scheme for imperial coordination in the prevention of the spread of disease in agriculture and horticulture, which it is proposed to organise in connection with the Colonial Entomological Research Committee. An official report states that Lord Cromer, chairman of the Entomological Research Committee, explained the proposals, the object of which is to establish a central organisation in London for the transmission of information to the various parts of the Empire, thus enabling them to legislate against the introduction of certain insect pests with a greater knowledge of the facts than would otherwise be possible. After a discussion, in the course of which the representatives expressed their hearty approval of the scheme, the following resolution, proposed by the Premier of New South Wales and seconded by the Premier of Tasmania, was passed unanimously:—"That this meeting is of opinion that the proposal to obtain and disseminate information of a scientific and useful nature, tending to prevent the spread by insects of diseases both in animals and plants to various Dominions and States of the Empire would be highly advantageous, and that steps should be taken to obtain the adhesion of the Dominions and States interested in the matter."

WE notice with deep regret the announcement of the death, on June 16, of Sir Rubert Boyce, F.R.S., Holt professor of pathology in the University of Liverpool, in his forty-ninth year.

THE Duke of Connaught has consented to become honorary president of the Royal Geographical Society.

THE annual conversazione of the Institution of Electrical Engineers will be held at the Natural History Museum, South Kensington, on Thursday, July 6.

THE council of the Royal Society of Arts, with the approval of the president, the Duke of Connaught, has awarded the Albert medal of the society for the current year to the Hon. Charles A. Parsons, C.B., F.R.S., for his experimental researches into the laws governing the efficient action of steam in engines of the turbine type, and for his invention of the reaction type of steam turbine and its practical applications to the generation of electricity, the ventilation of mines and other large spaces, blast-furnace work, ship propulsion, and other important purposes. The beneficial results which have followed upon these inventions include a cheapening of the production of mechanical power, greater economy and speed for steamships, and the first successful solution of the problem of rotary engines, which long had baffled many other inventors.

As already announced, the twenty-second annual conference of the Museums Association will be held in Brighton on July 10–15 next under the presidency of Mr. H. M. Platnauer, who will deliver his address on the morning of July 11. The same evening Dr. F. A. Bather, F.R.S., will deliver a public lecture on "Open-air Folk-Museums." The mornings of July 12 and 13 will be devoted to the reading of papers. Numerous excursions and receptions have been arranged for the visitors. The association was founded in 1889 with the object of improving and extending the work and usefulness of museums, the word being used in its widest sense to include collections illustrating pure and applied art, archæology, technology, and the natural sciences. Originally confined to the institutions of Great Britain and Ireland, the association has been joined by leading museums of all types in every part of the world, and now includes members from most countries of the world.

AN appeal has been made by the British Empire League for funds to secure the establishment of a solar observatory in Australia. The need for such an observatory is strongly felt by solar physicists. A cooperative scheme of research has been initiated between the great solar observatories of Europe, America, and India whereby the sun may be continuously observed throughout the whole of the twenty-four hours, but a gap exists between the two latter stations which would be filled by a solar observatory in Australia. Mr. Geoffrey Duffield, on behalf of men of science, has personally pressed this subject on politicians in the Commonwealth, and Mr. Deakin has promised 1500*l*. a year upkeep if the sum of 10,000*l*. is privately forthcoming. 4000*l*. has already been offered in money and apparatus, so that 6000*l*. is still required. The scientific world will be grateful to the British Empire League for bringing the matter before members of the league and others, thus giving them an opportunity to support a movement which, if successful, will complete the chain of solar observatories which circle the earth, and enable the international scheme to be carried into complete effect. Mr. C. Freeman Murray, secretary of the league, Norfolk House, Laurence Pountney Hill, London, E.C., will be glad to receive and acknowledge any subscriptions which may be sent to him towards this important project.

AN extra meeting of the Chemical Society was held on Wednesday, June 14, when Prof. T. W. Richards, of Harvard University, delivered the Faraday lecture, entitled "The Fundamental Properties of the Elements." The president, Prof. Percy F. Frankland, in introducing the lecturer, stated that the Chemical Society had assembled to celebrate what was one of the most important festivals in the calendar of the society, namely, the delivery of the Faraday lecture and the presentation of the Faraday medal. The significance of the meeting would be most effectively realised by calling to mind the names of the following illustrious men who had acted as Faraday lecturers since the first lecture was delivered by Jean Baptiste André Dumas in 1869:—Stanislao Cannizzaro, 1872; August Wilhelm von Hofmann, 1875; Charles Adolphe Wurtz, 1879; Hermann Ludwig Ferdinand von Helmholtz, 1881; Dmitri Ivanovitsch Mendeléeff, 1889; Lord Rayleigh, 1895; Wilhelm Ostwald, 1904; Emil Fischer, 1907. To these eminent *savants* the society had now added another in the person of Prof. Richards, whose great work and whose great contributions to science, especially his determination of atomic weights and his experiments on the compressibility of the elements, are not only well known in this country, but throughout the whole chemical world. Prof. Richards then delivered the Faraday lecture, of which we hope to print an abridgment in a subsequent issue. At the conclusion of the lecture the president, in presenting the Faraday medal to Prof. Richards, spoke of the sincere appreciation and the deep regard which his colleagues in this country had for his work, and also for the great and enduring importance which was attributed to his scientific discoveries. The vote of thanks to the lecturer, which was proposed by Prof. W. Odling, seconded by Sir William Tilden, and supported by Prof. Harold B. Dixon, concluded the meeting.

MR. W. HOUGH, curator of ethnology in the United States National Museum, has prepared a descriptive catalogue of the valuable ethnographical collections made by Mr. Hoffman Philip, Minister and Consul-General at Addis Abeba, the capital of the Emperor Menelik. Ethnographical material from Abyssinia is notably scanty, and this large collection is interesting on account of the survivals which it exhibits from the ancient culture of northern Africa, the neighbouring Asiatic continent, and eastern Europe.

MR. R. TORII, under the title of "Études anthropologiques, Les Aborigènes de Formose," contributes to the Journal of Science issued by the Imperial University of Tokyo an introductory account of the primitive races of the island. The present portion consists of a list of the tribes with their geographical distribution, and it is accompanied by a large collection of photographs illustrating their physical appearance, environment, and occupations. Anthropologists will await with interest the publication in the journal of further instalments of the results of Mr. Torii's careful survey of these little known races.

MUCH has been written about the North-West Frontier Province, once an integral part of the Punjab, and specially interesting in connection with the restless Pathan tribes and the diversity of its physical characteristics. The problems which face the officers who control the relations of the British Government with the races within and beyond our border are discussed by a distinguished political officer, Mr. W. R. H. Merk, in a paper read before the Royal Society of Arts on May 25, and published in the society's journal. The conclusion of the writer, supported by Lord Minto and generally concurred in by Sir Mortimer Durand, Sir T. Holdich, and other authorities who joined in the discussion, is that, though we may expect occasional trouble from these tribes, our frontier policy is gradually attaining its object, and that it is possible that in the future this belt of rugged mountain territory will be, not a source of anxiety, but a barrier against aggression and a substantial addition to the security of India.

THE report of the Otago University Museum for 1910 records the gift to that institution of the valuable collection of Maori ethnology made by the late Dr. Hocken, who died on May 17, 1910.

IN the May number of *The Ottawa Naturalist* Mr. Lambe describes the skull of a new species of the bear-like genus Arctotherium from the Pleistocene of the Yukon. The genus, which is in some degree intermediate between Ursus and the extinct Old World Hyænarctus, has not hitherto been known north of California, and has accordingly been regarded as a southern type. The discovery of *A. yukonense* is therefore of considerable importance, as indicative of the northern origin of these huge, big-headed bears, and thus of the probable genetic connection with Hyænarctus.

WE have received the first section of a work to be published by Messrs. Friendländer, of Berlin, under the title of "Nomenclator animalium generum et subgenerum," in two volumes, at the price of 5*l*. The section received is devoted to the Primates. The various names are arranged in generic order, without any reference to the species by which they are typified. When names have been misspelt, they are frequently quoted as if they were new terms proposed by those responsible for such errors, without any clue as to their real origin, as, for instance, in the case of Aulaxinus for Aulaxinuus.

THE discovery in the autumn of 1907 of mummified carcases of mammoths and rhinoceroses in the ozokerit deposits of the Starunia district of eastern Galicia gave rise to considerable interest at the time. The specimens were transferred to the museum at Lemberg, where the skin of the rhinoceros has been set up, and an illustrated account of both specimens, by Mr. E. L. Niezabitowski, has been published in the April number of the *Anzeiger d. Akad. d. Wissenschaften in Krakau*. The rhinoceros belongs to the woolly species (*Rhinoceros antiquitatis*), and so well is the head preserved, that the author has been enabled to compare it in detail with that of its nearest relative, the existing white rhinoceros of Africa. The species presenting the next nearest relationship appears to be the European Pleistocene *R. mercki*. The hair of the Starunia rhinoceros had disappeared.

IN *The British Medical Journal* for June 3 (p. 1310) Dr. Leonard Hill and Mr. Martin Flack publish a second note on the comparative nutritive value of white, standard, and whole-meal bread when used as food for rats. The experiments show still more conclusively than in their first note (see NATURE, May 11, p. 355) the deficiency of white bread as a food, and the better nutritive qualities of standard and whole-meal breads. The germ seems to contain adjuvant bodies whereby the tryptophane-containing portions of the proteins are split off in larger amount and more easily when it is present in the flour.

IN his annual report for the year 1910, recently issued, Dr. Herbert Williams, medical officer of health for the Port of London, describes the incidence of plague among the rats and the measures taken for plague destruction in the port. Plague has now appeared among the rats for three years in succession: in 1908 in the West India Dock during five weeks in August and September; in 1909 seven dead rats which were proved to have died of plague were found in the South-West India Dock; and in 1910 three dead plague rats were picked up in the Royal Albert Dock. Of 199 rats captured and examined last year, only three were plague-infected. Dr. Williams remarks that this occurrence of plague among the rats three years in succession indicates the need for special vigilance.

THE rhythmic character of the movement exhibited by the plasmodia of Myxomycetes is discussed by Dr. V. Vouk in the *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften*, Vienna (vol. cxix., part viii.). The progressive and regressive flows together constitute a rhythmic period, which is found to be tolerably constant for the main streams of any given plasmodium. The period increases up to a certain point with the age and size of the plasmodium. Obviously mechanical stimuli upset the rhythmic flow.

THE frequent occurrence of localised hailstorms, generally of very short duration, as a typical phenomenon during late spring and summer in Missouri and Nebraska, prompted an investigation into the injury caused to forest trees, the results of which are communicated by Mr. F. J. Phillips in the Transactions of the Academy of Sciences (vol. xix., No. 3). Catalpa, sycamore, and mulberry suffered most both in the matter of defoliation and bark wounds. The soft nature of the bark on cotton wood and box elder was also apparent in the damage sustained. It is suggested that hail injury increases the development of *Polystictus versicolor* on Catalpa.

A NOTE on fungi collected in clay mines is communicated by Mr. P. Spaulding to the report of the Missouri Botanical Garden (1910). The greater number of the specimens were growing on the oak timbers used as supports. *Polystictus versicolor* and *Merulius lachrymans* were generally common, and *Merulius rubellus* was abundant in one mine. Stalked pendant forms of *Hydnum erinaceus* and *Schizophyllum commune* were also found. Only one fungus, *Fomes annosus*, was observed on the pine timbers, and *Coprinus atramentarius* was growing on the clay.

AN explanation of the differences observable in specimens of the common garden shrub, *Osmanthus Aquifolium*, is offered by Dr. O. Stapf in *The Kew Bulletin* (No. 4), as he is able to identify two plants, distinct both in foliage and flowers. The type of the original species has a leaf like the holly, and bears both hermaphrodite and staminate flowers. Another type, having leaves with shallower indentations, and for which only staminate flowers are known, fits in with a species segregated long ago as *Osmanthus Fortunei*. It has been suggested that the latter represents a hybrid between *O. Aquifolium* and *O. fragrans*; this opinion is supported by the characters, including the less hardy constitution, of *O. Fortunei*. Another item of horticultural interest is supplied by the note acknowledging the receipt of seeds of trees and shrubs collected in south-west China by Mr. Forrest. They include a number of rhododendrons, in connection with which the question arises whether any of them will supply a yellow-flowered hardy shrub so long desired.

THE systems of training and pruning fruit trees followed by the Japanese, as is the case with so many of their methods, are essentially different from those prevailing in European countries. According to the account by Prof. T. Ikeda, published in the Journal of the Royal Horticultural Society (vol. xxxvi., part iii.), a system—known as "tana"—of training the branches on overhead trelliswork is generally adopted for pears and vines, less often for plum and apple trees. The trellis is made of bamboos or wire fitted on wooden posts at a height of 5½ feet and one to two feet apart; the pruning is very light, and is generally done in winter. Tana-training is said to offer advantages, notably in the matter of early fruit production and of protection from wind and rain storms. A more vigorous system of pruning is adopted in the case of Kaki trees, *Diospyros Kaki*, that appears to have arisen out of the practice of pulling the fruit with a portion of branch suitable for hanging it up to dry. The fruiting shoots are broken at the base, while the sterile shoots are left intact to produce spurs the next year.

WHAT is popularly known as "blackhead" in turkeys covers several different diseases, but one has been studied in some detail by Hadley and Amison, of the Rhode Island Agricultural Experiment Station, and traced to flagellated protozoa occurring in the cœcum. The organisms are identical with some previously described by Smith as *Amoeba meleagridis*; their development was studied, and found to resemble that of other parasitic flagellates which, at certain stages, have the habit of losing their flagella and becoming amœboid. They occur also in the English sparrow and other wild birds, several of which can act as hosts, and further they are found in game birds. So much damage is done that, in some districts, they constitute a severe menace to the poultry-raising industry.

SOME years ago Whitney and Means investigated the connection between the conductivity of a soil and the amount of saline matter present, and as a result of their experiments a method was elaborated whereby the percentage of soluble salts in "alkali" soils could be estimated in the field with sufficient accuracy for ordinary purposes and in a very short space of time. Thus a survey of a whole district could be made, and it was possible to ascertain the effects of irrigation, cultivation, &c., on the soluble salts of the soil. A bulletin has recently been issued by the United States Department of Agriculture giving the results of accumulated experience with the method. The writers, Messrs. R. O. E. Davis and H. Bryan, state that the method works well provided there is not too much organic matter present, and provided also carbonates are practically absent. In the former case it is better to drop the electrical method altogether, in the latter case the method can still be used, but a special set of tables is needed.

THE Canadian Department of Mines has sent us a volume, by Mr. F. Cirkel, entitled "Chrysotile-Asbestos, its Occurrence, Exploitation, Milling and Uses," which gives a very complete account of this extremely important Canadian industry. Asbestos is obtained from a relatively restricted area in the province of Quebec, but it has attained in a short time a most prominent position amongst the mineral products of Canada. The Canadian output at present is about 60,000 tons, forming about 80 per cent. of the total production of the whole world; it has practically doubled since 1904. The account now published, which is essentially a new edition of a previous report on the same subject and by the same author, issued in 1905, is a most exhaustive one, and deals very fully with all aspects of the asbestos industry, with the occurrence and distribution of the mineral, its mining and dressing, and with the subsequent manufacture of the prepared mineral into a large number of articles. Whilst, perhaps, more especially written from the commercial rather than the scientific point of view, it contains a quantity of valuable information not otherwise accessible, and should be of decided assistance to all who have to deal with asbestos either in the crude or in the manufactured state.

ON Monday, June 12, Dr. Arthur Neve, who has spent thirty years in Kashmir, lectured before the Royal Geographical Society on his journeys in the Himalayas and on some factors of Himalayan erosion. In Ladak erosion is at the present time not especially active, and the valleys are of easy gradient, but in Lower Baltistan and Gilgit rivers flow in deep gorges and have cut their way recently through immense accumulations of detritus. The rainfall is slight, and the dry, loose deposits, by their instability, are a source of considerable danger, which is greatly increased in the wet season, when vast landslips are common and rapidly alter the contour of the hillsides. Accounts were given of the damage caused by glaciers blocking up lines of drainage in such a way as occurred some years ago in the Saru valley. The lecturer's travels in the Karakorum range and the Nun Kun group in the Central Himalayas were referred to, and several points of doubtful topography were discussed. The subject of Himalayan erosion and topography were treated descriptively rather than analytically from experience gained in a long acquaintance with the region.

Le Radium for May contains a paper by M. de Broglie and L. Brizard in which their observations on the apparent radio-activity of sulphate of quinine are described. They find that the phenomena show neither of the characteristics of radio-activity—*i.e.* they are not atomic and are not independent of external influences. They have succeeded in tracing them to a thin layer of strongly ionised gas which surrounds the salt during hydration or dehydration, and they find that sulphate of chinchonine, which possesses the same phosphorescent properties as sulphate of quinine, shows the same effects. The search for other salts has not been successful. The mobility of the ions formed is of the order 1 centimetre per second in a field of 1 volt per centimetre, which shows that the ions are small. They may either diffuse slowly outwards from the layer in which they are formed or may be driven out more quickly by an electric field. In the former case saturation currents can be obtained, in the latter the current increases indefinitely with the voltage applied. In either case the conductivity of the surrounding gas increases rapidly as its pressure is diminished.

UNDER the title of "First Report of the Bird Construction Committee," the Aëronautical Society of Great Britain has issued an attractive pamphlet, in which it is sought to summarise existing knowledge of the mechanical constants associated with the flight of birds. A special feature is the tabulated list of about 460 species of bird with numerical values of their wing dimensions, weights of their muscles, and similar data, compiled from the works of Harting, Marey, Moillard, Mullenhof, Legal and Reichel, and Winter. To the ornithologist, the list of Latin names with their equivalents in English, French, German, Italian, Spanish, and Russian will be exceedingly useful. Another pamphlet dealing with natural flight is Dr. Wolfgang Ritter's study of "The Flying Apparatus of the Blow-fly," published by the Smithsonian Institution (1911). For the first time in this connection, photography was used to delineate the structure of the wings and arrangement of the thoracic muscles, most of the illustrations being stereoscopic. Other figures give kymographic curves showing the movement of the wings, and serial photographs of the insect in the act of flight. Natural flight also figures in a pamphlet by Dr. Otto Wiener entitled "Vogelflug, Luftfahrt und Zukunft" (Leipzig: Johann Ambrosius Barth, 1911, pp. 60), based on the author's contributions to the *Deutsche Revue*. In addition, however, to sailing and other flight, the article deals with the influences of artificial flight in peace and war, its future effects on human progress, and other considerations of an equally general character.

OUR ASTRONOMICAL COLUMN.

THE ECLIPSE OF THE SUN, APRIL 17, 1912.—Next year's eclipse of the sun, although, under the best conditions, of very short duration, is arousing a great deal of interest owing to the proximity of the central line. It was at first suggested that a very brief totality might occur near Paris, but the slight uncertainty as to the moon's semidiameter makes this doubtful; probably it will be a very large annular eclipse there. According to the data of the *Connaissance des Temps* a six seconds' totality should occur in Spain, but according to those of *The Nautical Almanac* the eclipse will not become more than annular anywhere.

In the June number of *L'Astronomie* M. Landerer discusses the conditions for Spain, and, taking the moon's semidiameter as 15′ 31·62″, he finds that at one or two places in the peninsula an evanescent totality should occur. At El Barco (Orense) the eclipse path should have a diameter of 166 metres, and totality should last for 0·2s., so that an intending observer would have to make very sure of his position. Between El Barco and Penafiel (near Oporto) would probably prove a better station, the computed totality at the latter place being 0·4s. For Castandiello, a small village in the province of Oviedo, the computed magnitude is 0·9990, and the eclipse may easily prove total. All the places are shown on a map accompanying the article, and a special article dealing with the conditions for eclipse in France is promised in the next number.

THE CHANGES ON JUPITER, 1881–1909.—An important monograph of 180 pages discussing the features of Jupiter during the period 1881–1909 is contributed by Dr. O. Lohse to vol. xxi. of the *Publikationen des Astrophysikalischen Observatoriums zu Potsdam*, No. 62.

The observations of the various spots, bands, and other surface features of the planet are discussed individually, and the descriptions often illustrated by a sketch of the special feature made at the time of observation. Measures of the equatorial and polar diameters were frequently made with a filar micrometer, and are tabulated and discussed for each opposition. For the mean values Dr. Lohse obtains 38·343″ ± 0·059″ for the equatorial, and 36·031″ ± 0·044″ for the polar, diameter; the ratio expressing the amount of flattening is 1/16·584.

The changes in various features and many other interesting points are discussed, and the monograph concludes with twelve excellent plates, eleven reproducing drawings of the planet and the twelfth showing the normal joviographic longitudes of the Red Spot during the period 1879–1909.

BARNARD'S COMET, 1892 V.—The third return of Barnard's 1892 comet is due this year, and if the period lies between 6·23 and 6·52 years, as given by two of the three sets of elements prepared by M. J. Coniel, there is a chance of its being rediscovered.

To facilitate the search, M. Coniel publishes a comprehensive ephemeris in No. 4504 of the *Astronomische Nachrichten*, which is based on the assumption of a period equal to 6·37 years, and shows the places (for 1911) week by week from July 1 to the commencement of 1912.

THE MOTION OF THE POLE.—The provisional report of the results obtained by the International Latitude Service, for 1910, is published, as usual, by Prof. Th. Albrecht in No. 4504 of the *Astronomische Nachrichten*. The figure accompanying the paper shows that practically since 1906·1 the swing of the momentary, from the true, pole has been increasing; the curve for 1910·0–1911·0 encircles the previous spiral curve described since 1900·0. The x and y values (extrapolated) for 1911·0 are +0·002″ and −0·282″ respectively.

THE PROPER MOTIONS OF THE STARS.—Several interesting conclusions are deduced by Dr. Oppenheim in a paper wherein he subjects to harmonic analysis the proper motions of the stars between declinations +38° and +65° given in the Greenwich new reduction of Groombridge's catalogue of circumpolar stars. He finds that the position of the stars into swarms along definitely directed "highways" is not finally established, and that their motions can be accounted for analytically by assuming a relative motion analogous to the geocentric paths of the minor planets, but he leaves the question of an ideal central body open (*Astronomische Nachrichten*, No. 4497).

STELLAR PARALLAXES.—More stellar parallaxes are given by Dr. Schlesinger in No. 4, vol. xxxiii., of *The Astrophysical Journal*. Seven stars are considered, and of these four have positive parallaxes greater than 0·1″. Among the latter, one of special interest is the well-known star Positiones Mediæ 2164, otherwise designated *Struve* 2398. The distance separating the components is now 17″, having increased nearly 5″ since the double was first measured by Struve in 1832. Recent measures show that the pair has a comparatively rapid orbital motion considering the great separation and the faintness of the components. Dr. Schlesinger finds the parallax to be +0·282″ ± 0·003″, and his results are so concordant, *inter se* and with independent determinations, that he considers that there are few stars the distances of which from us are known with so small a probable error.

POSITIONS OF STARS IN THE HUYGHENIAN REGION OF THE ORION NEBULA.—As a Bulletin of the Philosophical Society (University of Virginia), vol. i., No. 4, Mr. Ralph E. Wilson publishes newly determined positions of a number of stars in the Huyghenian region of the Orion nebula. After reviewing the earlier work on the subject he gives his measures in detail; all the measures were referred finally to Bond's No. 628, but Nos. 558, 669, and 685 were also employed as fundamental stars. Six stars show what appears to be proper motion, which in the case of Bond's 612 and 618 amounts to 4″ or 5″ a century northwards. The motions of 622 and 636 can be explained by the supposition that they are physically connected with the trapezium and share its motion. In the cases of Nos. 686 and 688, the proper motions are affected by large proper motions, or Bond's positions are erroneous; observations in ten years' time would probably settle this point.